

CLAIMS

1. A gear shift control device for a work vehicle, comprising:

a transmission arranged on a power transmission path for an engine and having gear shift clutches;

5 an input clutch arranged between the engine and the transmission on the power transmission path for the engine;

gear shift clutch control means for selecting a gear shift clutch in response to a gear shift command to switch from a gear shift clutch used before gear shifting to the selected gear shift clutch to be used after the gear shifting to cause an engine power to be
10 transmitted to the selected gear shift clutch of the transmission to be used after the gear shifting via the input clutch; and

input clutch control means for controlling the input clutch to be switched from a connected state to a power-transmittable sliding state in a period of time from when a cut-off operation of the gear shift clutch used before the gear shifting is started to when a
15 connecting operation of the selected gear shift clutch to be used after the gear shifting is completed.

2. The gear shift control device for a work vehicle according to Claim 1, wherein each of the gear shift clutches of the transmission includes a forward clutch to cause the

20 vehicle to travel forward and a reverse clutch to cause the vehicle to travel in reverse; and

the gear shift clutch control means performs:

a control to select the forward clutch in response to the gear shift command to switch from the reverse clutch used before the gear shifting to the selected forward clutch to be used after the gear shifting; or

25 a control to select the reverse clutch in response to the gear shift command to

switch from the forward clutch used before the gear shifting to the selected reverse clutch to be used after the gear shifting.

3. The gear shift control device for a work vehicle according to Claim 1, wherein
5 the work vehicle has operating means for selecting the forward clutch or the reverse clutch according to an operating position.

4. The gear shift control device for a work vehicle according to Claim 1, comprising
a pressure detector for detecting a clutch pressure of each of the gear shift clutches,
10 wherein the input clutch control means performs a control to reduce a clutch
pressure of the input clutch to a predetermined pressure based on a clutch pressure of the
gear shift clutch used before the gear shifting and/or a clutch pressure of the selected gear
shift clutch to be used after the gear shifting detected by the pressure detector.

15 5. The gear shift control device for a work vehicle according to Claim 1, wherein
the input clutch control means performs a control to reduce a clutch pressure of the input
clutch to a predetermined pressure based on an elapsed time from a time at which a clutch
chamber of the selected gear shift clutch to be used after the gear shifting is filled with
pressure oil.

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6. The gear shift control device for a work vehicle according to Claim 1, wherein
the input clutch control means performs a control to reduce a clutch pressure of the input
clutch to a predetermined pressure based on an elapsed time from when the gear shift
command is generated.

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7. The gear shift control device for a work vehicle according to Claim 1, wherein the input clutch control means performs a control to switch the input clutch from the connected state to the power-transmittable sliding state after a time when a clutch chamber of the selected gear shift clutch to be used after the gear shifting is filled with pressure oil.

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8. The gear shift control device for a work vehicle according to Claim 1, wherein the input clutch control means restores the input clutch to an original connected state from the power-transmittable sliding state after a time when a connecting operation of the selected gear shift clutch to be used after the gear shifting is completed.

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9. A gear shift control method for a work vehicle in which an input clutch and a transmission having gear shift clutches are arranged on a power transmission path for an engine, and one of the gear shift clutches is selected according to a gear shift command to switch from a gear shift clutch used before the gear shifting to the selected gear shift clutch to be used after the gear shifting, so that an engine power is transmitted to the selected gear shift clutch of the transmission to be used after the gear shifting via the input clutch, the method comprising the steps of:

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(a) starting a cut-off operation of the gear shift clutch used before the gear shifting;

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(b) switching the input clutch from a connected state to a power-transmittable sliding state; and

(c) completing a connecting operation of the selected gear shift clutch to be used after the gear shifting.

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10. The gear shift control method for a work vehicle according to Claim 9,

comprising the steps of:

(a) starting the cut-off operation of the gear shift clutch used before the gear shifting;

5 (b)' switching the input clutch from the connected state to the power-transmittable sliding state after a time when a clutch chamber of the selected gear shift clutch to be used after the gear shifting is filled with pressure oil; and

(c) completing the connecting operation of the selected gear shift clutch to be used after the gear shifting.

10 11. The gear shift control method for a work vehicle according to Claim 9, comprising the steps of:

(a) starting the cut-off operation of the gear shift clutch used before the gear shifting;

15 (b) switching the input clutch from the connected state to the power-transmittable sliding state;

(c) completing the connecting operation of the selected gear shift clutch to be used after the gear shifting; and

(d) restoring the input clutch from the power-transmittable sliding state to an original connected state after a time when the connecting operation of the selected gear
20 shift clutch to be used after the gear shifting is completed.